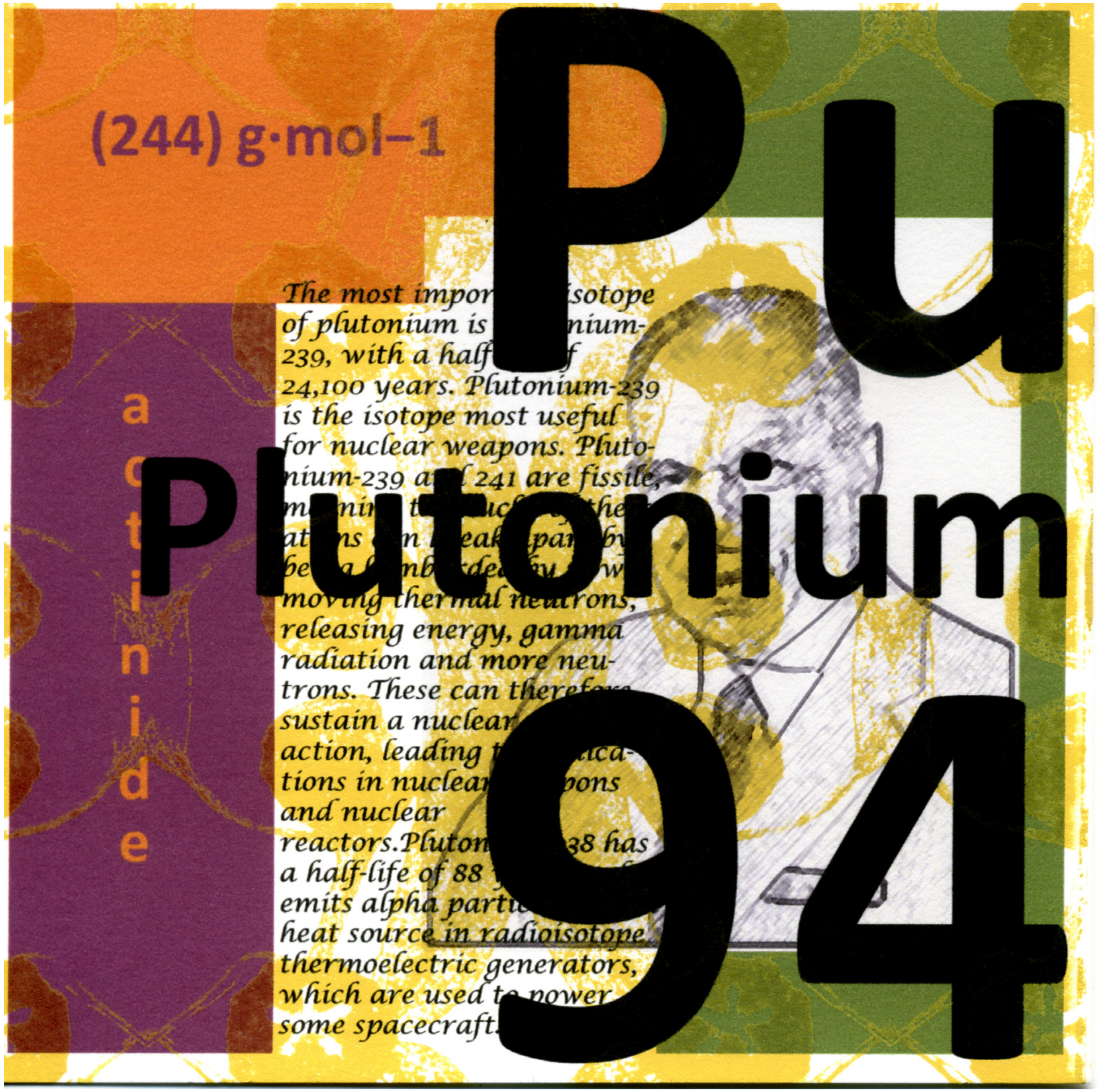

JOHN INGLETON

PLUTONIUM

Element Symbol: Pu
Atomic Number: 94

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evolve scientific recruitment
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Plutonium was discovered in 1941 by Seaborg, McMillan, Kennedy, and Wahl at the University of California, Berkeley. It was named after the planet Pluto, having been discovered directly after Neptunium. The metal has a silvery appearance and takes on a yellow tarnish when slightly oxidized. It is chemically reactive. A relatively large piece of plutonium is warm to the touch because of the energy given off. Larger pieces will produce enough heat to boil water.

The most important isotope of plutonium is 239Pu, with a half-life of 24,200 years. Because of this, there are only extremely tiny trace amounts naturally in Uranium ores. It is produced in extensive quantities in nuclear reactors from natural uranium. Australia has never directly produced plutonium from its research reactor at Lucas Heights. However, it is well established that the sale of uranium in the 50s and 60s resulted in the uranium being used to produce plutonium for military purposes.

Plutonium is a key component in modern nuclear weapons; care must be taken to avoid accumulation of amounts of plutonium which approach critical mass - the amount which will self-generate a nuclear reaction. Despite not being confined by external pressure as is required for a nuclear weapon, it will nevertheless heat itself and break whatever confining environment it is in. Plutonium could also be used to manufacture radiological weapons. It is therefore used in generators such as those powering the Galileo and Cassini space probes. Plutonium-238 was used on the Apollo-14 lunar flight to power seismic devices and other equipment left on the Moon, and it was also the power supply of the two Voyager supercraft launched in 1977.

Trace amounts are found naturally in uranium-rich ores. Plutonium may also enter the environment, however, from releases of nuclear reactors, weapons production plants, and research facilities. Annual world production of plutonium is in excess of 50 tonnes. Plutonium may enter surface water from accidental releases and disposal of radioactive wastes. Soil can become contaminated with plutonium through fallout during nuclear weapons testing.

As of 2003, there has yet to be a single human death officially attributed to plutonium exposure. The radiation it emits does not penetrate the skin, but can irradiate internal organs when inhaled or ingested. Extremely small particles of plutonium on the order of micrograms can cause lung cancer if inhaled. Considerably larger amounts may cause acute radiation poisoning and death if ingested or inhaled. Exposure of humans to plutonium is not likely, but sometimes it takes place as a result of accidental releases during use, transport or disposal. Because plutonium has no gamma radiation, health effects are not likely to occur while working with plutonium, unless it is breathed in or swallowed somehow. Furthermore, plutonium may affect the ability to resist disease and the radioactivity from plutonium may cause reproductive failure.

Provided by the element sponsor Evolve Scientific Recruitment

ARTISTS DESCRIPTION

In May-June 2009 I was fortunate enough to undertake a two month residency in the University of Tasmania's Rosamund McCulloch studio at the Cite Internationale des Arts in Paris. This time was spent researching information about the use of Australian flora in French decorative arts in the period 1890-1920 by such craftsmen as Emile Galle, Rene Lalique and Auguste Daum. This research has inspired most of my work since that time so it is no surprise to find that it underlies my images for the periodic table. All these chemicals are integral to the composition or understanding of the universe of which our natural environment is a part.

Background: a pattern based on the Tasmanian Bluegum (Eucalyptus globulus globulus) because it grounds our sense of identity (as Tasmanians) and this is often the basis of our understanding of the world around us. Colours: drawn from this same environment because it is naturally part of this sense of place. Image/text: because this is the way I work; researching my work before I start to develop imagery and it seemed appropriate to identify both the discoverers and the uses of these chemicals.

While there were many possible ways of producing these prints I have chosen to use a combination of silkscreen and digital printing because they work well together and met the needs of this project.

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